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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JEFFREY SHANE REITER

Appeal 2009-013197
Application 10/810,638
Technology Center 1700

Decided: June 30, 2010

Before CHARLES F. WARREN, CATHERINE Q. TIMM, and
STEPHEN WALSH, *Administrative Patent Judges*.

TIMM, *Administrative Patent Judge*.

DECISION ON APPEAL

I. STATEMENT OF CASE

Appellant appeals under 35 U.S.C. § 134 from the Examiner's decision to reject claims 1-8, 11-14, and 16-20. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

Appellant's invention relates to an apparatus and method for suppressing plasma formation at the gas introduction means of a plasma apparatus such as a reactive sputtering apparatus (Spec. 1:2-7). Claim 1 is illustrative of the apparatus and reproduced below. Claim 11 recites steps for using the apparatus to treat a workpiece.

1. An apparatus adapted for treating or processing at least one substrate/workpiece in a plasma, comprising:

- (a) a chamber defining an interior space;
- (b) means for generating a plasma in said interior space of said chamber;
- (c) mounting means adapted for positioning at least one substrate/workpiece in said interior space of said chamber for receiving treatment in said plasma; and
- (d) a gas supply means for injecting gas(es) into said interior space of said chamber, comprising:
 - (i) an inlet portion extending exteriorly of said chamber;
 - (ii) an outlet extending into said chamber and including a pair of arcuately-shaped tubular gas outlet portions for injecting gas(es) into said interior space; and
 - (iii) means for applying a bias potential to said gas supply means for suppressing plasma formation at said outlet portions, wherein said means for applying a bias potential is electrically isolated from said means for generating a plasma, and wherein said apparatus comprises a spaced-apart pair of cathode/target assemblies and said mounting means positions at least one

substrate/workpiece in the space between said pair of cathode/target assemblies, and said arcuately-shaped tubular gas outlet portions are positioned between said spaced-apart pair of cathode/target assemblies.

The Examiner maintains, and Appellant seeks review of, the following rejections:¹

1. Claims 1-8, 11-14, 16, and 18-20 were rejected under 35 U.S.C. § 103 (a) as being unpatentable over Zejda (US 5,228,968, issued Jul. 20, 1993) in view of Maeda (US 5,620,523, Apr. 15, 1997) and Ando (US 6,458,253 B2, issued Oct. 1, 2002).

2. Claim 17 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Zejda in view of Maeda and Ando, and further in view of Suzuki (US 6,627,253 B2, issued Sep. 30, 2003).

II. DISPOSITIVE ISSUES

With respect to the first rejection, Appellant presents arguments for claims 1-8 as a group and arguments for claims 11-14, 16, and 18-20 as a group (Br. 5-13). In accordance with 37 C.F.R. § 40.37(c)(vii), we select claim 1 as representative for the first group and claim 11 as representative for the second group and decide the issues based on those claims.

The issues presented are:

Does the evidence as a whole support the Examiner's finding that the combination of Zejda, Maeda, and Ando suggests an apparatus with a gas supply means including an outlet with a pair of arcuately-shaped tubular gas outlet portions positioned between a spaced apart pair of cathode/target

¹ The Examiner withdrew a rejection under 35 U.S.C. § 112, ¶ 2 (Ans. 10).

assemblies as required by subsection (d)(ii) and the last wherein clause of claim 1?

Does the evidence as a whole support the Examiner's finding that the combination of Zejda, Maeda, and Ando suggests a method including a step of injecting gas(es) between a spaced-apart pair of cathode/target assemblies by means of an electrically isolated gas supply means having a pair of arcuately-shaped tubular gas outlet portions as required by step (c) of claim 11?

III. DISCUSSION

As an initial matter, we note that Appellant's arguments in the Brief in many respects do not address the Examiner's specific findings of fact and application of the law presented in the Final Rejection.

As summarized by the Examiner in the Final Rejection,

The Examiner uses Zejda as the primary reference with Maeda et al. and Ando et al. modifying Zejda. Zejda and Ando et al. have been presented and discussed before. Zejda represent the best teaching of the spaced apart targets. Ando et al. represent the best teaching of applying an electrical potential to the gas supply means. Maeda et al. teach the arcuate gas supply means and utilizing arcuate gas supply means in place of ring gas supply means which Zejda specifically use.

(Final Rej. 9-10.)

In the Brief, Appellant first makes the statement that the combination of Zejda, Maeda, and Ando "does not suggest the claimed apparatus adapted for treating or processing at least one substrate/workpiece in a plasma." Appellant more narrowly states that the reference combination does not suggest the limitations requiring that the gas supply means have "an outlet extending into the chamber and including a pair of arcuately-shaped tubular

gas outlet portions for injecting gas(es) into the interior space,” and the position of the arcuate-shaped tubular gas outlet portions “between the spaced-apart pair of cathode/target assemblies” as required by claim 1 (d)(ii) and the last wherein clause. Appellant then argues that there is no suggestion to modify the apparatus of Zejda to include the outlet of the shape and position claimed, and Maeda is in a different field of endeavor than Zejda and Ando (Br. 6-8).

Our duty is to review the rejection to determine if the Examiner erred. *See* 35 U.S.C. § 6(b)(2007) (“The Board of Patent Appeals and Interferences shall, on written appeal of an applicant, review adverse decisions of examiners”); *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential). Given the overall tenor of Appellant’s arguments, which focus on the shape and position of the gas outlet portions, as compared to the Examiner’s rejection, we interpret Appellant’s arguments as alleging that the Examiner erred in applying Maeda as evidence of alternative ways to supply gas as compared to the ring-shaped gas supply means of Zejda and in concluding, based on that evidence, that it would have been obvious to modify Zejda’s ring-shaped gas outlet portion with Maeda’s pair of arcuate-shaped gas outlet portions (*Compare* Br. 6-8 to Ans. 6-7). Therefore, we focus our review on this question of error.

There is no real issue with regard to the limitation in claim 1 requiring that the arcuately-shaped tubular gas outlet be positioned between a spaced apart pair of cathode/target assemblies. Such is clearly taught by Zejda (Fig. 4; col. 2, ll. 58-64; col. 3, ll. 32-38). As acknowledged by the Examiner, Zejda does not teach an arcuately-shaped gas outlet portion (Ans. 5). As

found by the Examiner, and not disputed by the Appellant, Maeda teaches alternative ways to supply gas to a plasma chamber (Ans. 6). Figures 9A and 9B of Maeda show ring-shaped manifolds similar to the ring-shaped gas manifold of Zejda, while Figures 8A and 8B of Maeda show to arcuately-shaped manifolds as alternatives to the ring-shaped manifold of Figures 9A and 9B (Maeda, Figs. 8-9; col. 8, l. 63 to col. 9, l. 30). Maeda provides evidence that using two arcuately-shaped manifold halves would have been understood to provide the same gas distribution function of a ring-shaped manifold. As such, we agree with the Examiner that it would have been obvious to a person of ordinary skill in the art to substitute the ring-shaped manifold of Zejda with the two arcuately-shaped manifolds of Maeda for the predictable result of distributing gas as desired by Zejda.

Appellant argues that it would not have been obvious to one of ordinary skill in the art to combine Maeda with Ando and Zejda in the manner proposed by the Examiner because Ando and Zejda are directed to sputtering apparatuses and processes, while Maeda is directed to a chemical vapor deposition apparatus and method (Br. 6). However, as pointed out by the Examiner, all the references are directed to providing gases to plasma chambers used to deposit thin films (Ans. 11). Whether the gas manifold is used in a plasma sputtering apparatus or a plasma-type chemical deposition apparatus, its function remains to distribute gas. Given the similarity in function and the fact that Zejda teaches a ring-shaped manifold, we cannot agree with Appellant that the Examiner's conclusion of obviousness under the law is in error.

As for the Appellant's argument that Maeda is in a different field of endeavor (CVD) as compared to Zejda, Ando and the present invention (sputtering), we note that the issue of non-analogous art is a threshold question that “merely connotes that it is relevant to a consideration of obviousness under § 103 as ‘prior art.’” *In re Sovish*, 769 F.2d 738, 742 (Fed. Cir. 1985). “[F]amiliar items may have obvious uses beyond their primary purposes.” *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 420 (2007). Here, Maeda is relevant because it is reasonably pertinent to the problem of supplying gas to a plasma chamber. *See In re Clay*, 966 F.2d 656, 659 (Fed. Cir. 1992) (“A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor’s endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor’s attention in considering his problem.”).

The evidence as a whole supports the Examiner’s finding that the combination of Zejda, Maeda, and Ando suggests an apparatus with a gas supply means including an outlet with a pair of arcuately-shaped tubular gas outlet portions positioned between a spaced apart pair of cathode/target assemblies as required by subsection (d)(ii) and the last wherein clause of claim 1.

With respect to claim 11, Appellant contends that the combination of Zejda, Maeda, and Ando does not suggest a method including a step of “injecting gas(es) between the spaced-apart pair of cathode/target assemblies by means of an electrically isolated gas supply means having a pair of arcuately-shaped tubular gas outlet portions” as required by step (c) of claim 11 (Br. 10). Appellant again argues that it would not have been obvious to

one of ordinary skill in the art to combine Maeda with Ando and Zejda in the manner proposed by the Examiner because Ando and Zejda are directed to sputtering apparatuses and processes, while Maeda is directed to a chemical vapor deposition apparatus and method (Br. 10-13). Appellant also again argues that Maeda is in a different field of endeavor (CVD) than Zejda, Ando, and the present invention (sputtering) (Br. 11). For the reasons stated above, we do not find these arguments persuasive.

Appellant has not shown that the Examiner erred in finding that the combination of Zejda, Maeda, and Ando suggests a method including a step of injecting gas(es) between a spaced-apart pair of cathode/target assemblies by means of a electrically isolated gas supply means having a pair of arcuately-shaped tubular gas outlet portions as required by step (c) of claim 11.

Turning to the rejection of claim 17, which further relies upon Suzuki, we note that Appellant's only argument is that Suzuki does not cure the deficiencies of Zejda Maeda and Ando. As Appellant does not present any sufficiently specific separate argument, Appellant has not shown that the Examiner erred in rejecting claim 17.

VI. CONCLUSION

On the record before us, we sustain the rejections maintained by the Examiner.²

² Only those arguments actually made by Appellant have been considered in this decision. Arguments which could have made but Appellant chose not to make have not been considered and are deemed to be waived. See 37 C.F.R. § 41.37(c)(1)(vii) (2008).

VII. DECISION

The decision of the Examiner is AFFIRMED.

VIII. TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

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